Document 61, Jim Willison, Aiken, SC Page 1 of 5

HLW & FD

EIS PROJECT - AR PF

April 12, 2000 Aiken, South Carolina



T.L. Wichmann, Document Manager U.S. Department of Energy Idaho Operations Office 850 Energy Drive, MS 1108 Idaho Falls, ID 83401-1563 Attention: Idaho HLW&FD EIS

Subject: Comments on DOE/EIS-0287D

I read with great interest the Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement (DOE/EIS-0287D). The document is very readable, ly .A (2) well laid out and its production values are far above any other EIS (DOE or otherwise) that I have seen. The graphics displaying the alternatives are particularly useful.

> While I applaud the style of the document, I was somewhat distressed about its content. I was particularly concerned with inconsistencies and inappropriate use of risk factors with regards to the hazards of radiation.

Rather than centralize discussions regarding what radiation is, how the human health VIII. G(3) effects are calculated, and what they mean, this key information has been inconsistently repeated at various places throughout the document. References are made to risk factors from two different organizations, one of which has no validity by itself in this country. The limitations on those risk factors have been ignored and risk factors have been applied to values for which they are invalid and yield ridiculous results.

While the main purpose of the document is to compare alternative actions, the inclusion of incorrect and inappropriate information raises credibility issues with other analyses in the document that have been performed properly. The document also is an official (d)A.111V publication of the Government of the United States and lends a certain cachet of approval to the invalid methods used in its preparation.

> I therefore offer the following comments and recommendations for the improvement of the document:

Document 61, Jim Willison, Aiken, SC Page 2 of 5

(II) A. IIIV

Comment 1: Risk factors for radiation are referenced as coming from both the International Commission on Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP). While the numerical values are identical, the source of the reference is important. ICRP recommendations are multinational and are supposed to be reviewed by national radiation protection organizations for adoption or revision by individual countries. This function is performed in the United States by the NCRP, which does not always adopt ICRP recommendations in full. Therefore, it is inappropriate to reference ICRP risk factors for radiation.

Recommendation 1: References within the document to ICRP risk factors for radiation should be changed to NCRP.

Comment 2: The Discussion of the Health Effects of Ionizing Radiation on pages 5-54 and 5-55 contains over-simplified, inaccurate, and incomplete information.

61-7

The text box includes a lengthy discussion about the calculation of collective dose and how extremely small doses to large numbers of people are equivalent to larger doses to smaller groups of people. This particular topic is the subject of much discussion within the radiation protection field and the source of some controversy. The NRCP even acknowledges this in publication 116, Section 2.2, stating that currently available observations in population samples do not exclude zero effects at very low doses. Yet, this discussion, as well as that in the Executive Summary make no mention of the uncertainties involved in the use of the risk factors.

The text box incorrectly states that the risk factors it uses are for doses of less than 20 61-8 rem. The key factor is not the dose, but the dose rate. The NCRP recommendations VIII. A(II) regarding the risk factors are for dose rates of less than 10 rem/hour. Most accident analyses are for a default time of 2 hours, hence the 20 rem short-term dose. However, this is an example of oversimplification to the point that the meaning is compromised.

There is much talk in this section regarding the calculation of small numbers of Latent Cancer Fatalities (LCF), yet very little information is provided to provide the public a VIII. A(II) useful reference. The document does mention that an average member of the public will receive 360 mrem/year of radiation exposure, yet no mention is made of the number of normal cancers in the local population. As much is made of the connection of the small radiation exposure values calculated in the report to latent cancer fatalities, the background value of "natural" cancer should be listed to provide a basis from which to

evaluate the proposed consequences.

Recommendation 2: The Discussion of the Health Effects of Ionizing Radiation should 61-10 be revised to add information regarding the limitations and uncertainties of the radiation risk factors, to correct the dose rate limitation, and to include baseline cancer risk data. VIII.G(3) In addition, in other portions of the document where descriptions of this type are duplicated, a reference should be added back to this section. 61-11

(11) A. 111V

2

61-5 VIII. A(6)

VIII. A(II) 61-4

DOE/EIS-0287

Document 61, Jim Willison, Aiken, SC Page 3 of 5

Comment 3: Throughout the document, radiation risk factors for calculating LCF are used inappropriately in calculating LCF probabilities to individuals.

61-12 VIII.A(11) While this EIS was clearly prepared using the DOE Recommendations for the preparation of Environmental Impact Statements, those recommendations regarding human health effects contain inconsistent and scientifically inaccurate guidance. NCRP risk factors for radiation are for populations, not individuals and only apply at radiation levels expected in routine operations. It is clear from the NCRP reports that the risk factors are only valid for the range of radiation exposures where stocastic risks (cancer) dominate. It is clearly inappropriate to calculate the number of fatal cancers that may develop when the population is exposed to radiation levels that will induce deterministic effects (non-cancerous direct effects). While the DOE recommendations call for the presentation of probabilities of cancer-induction, the NCRP risk factors are only for populations.

As an example of this lunacy of blindly calculating individual LCF probabilities; Table 5.2-38, analysis BDB08, exposes a non-involved worker to 4600 rem of dose and calculates that their probability of a fatal cancer is greater than 100% (Specifically, 1.8). This at a dose level that would kill the worker from acute radiation effects long before they could live long enough to develop cancer. They should be so lucky as to live long enough to die from cancer.

The effects of radiation on the human body and estimating the risk of radiation is complex and requires numerous assumptions. There are also limits that must be placed on the validity of the analysis for it to remain scientifically accurate. Calculation of LCFs for doses well above routine radiation protection levels is clearly an example of the use of scientific values outside their valid range.

Recommendation 3: The calculated probabilities of Latent Cancer Fatalities to individuals (Maximally Exposed Individual and Noninvolved worker) presented in the document should be removed in $\widehat{\text{full.}}$

61-13 VIII.9(5) Comment 4: The Facility Accident Appendix introduces the concept of Integrated Involved Worker Risk, combining the risk from non-radiological occupational accidents, the risk associated with occupational radiation exposure, and the normalized risk from accidental exposure to much higher levels of radiation. This combination of three extremely different types of risk is both novel and inappropriate.

Industrial fatalities are easy to understand. There is an accident and someone dies. Generally, something large and heavy falls on them or they fall and they die. There are many variations of industrial fatalities, but they all have one thing in common; they are immediate and final. You don't wait 20 years and then maybe develop a fatal disease; you just die.

3

Document 61, Jim Willison, Aiken, SC Page 4 of 5

Occupational radiation exposures are chronic in nature and the uncertainty associated with the risk is high. Occupational dose limits are set to keep the risk of developing a fatal cancer low, but high occupational doses within established occupational limits will not guarantee a fatal cancer.

Accident radiation doses to involved workers will vary in effect, but share more in common with industrial fatalities than with long-term occupational exposures. At the upper end of the possible radiation doses, the worker dies. At lesser but still high doses, the worker may be seriously ill for a long period of time. At accident doses in the range of occupational exposures, there will be no discernable effect on the worker and they may or may not contract a fatal cancer later in life. In its use of accident consequences for the Integrated Involved Worker Dose, the accident consequences are normalized by the probability of the accident. While this method is useful for comparing between alternatives and to ensure that contributors to risk have been identified, its use in combination with industrial fatality rates and occupational radiation exposure risks is inappropriate.

Combining three different risk types of three different mechanisms is much like combining apples, oranges, and filberts. You can do the math, but it really doesn't mean anything. The calculation and use of the Integrated Involved Worker Risk is technically invalid, misleading, and detracts from useful discussions regarding the relative risk of alternatives.

Recommendation 4: The discussion and calculation of Integrated Involved Worker Risk should be removed from the document in total.

Comment 5: The Executive Summary contains much material that is not presented in the main document.

61-14 1X.A(1)

1X.A(1) A summary is supposed to summarize information from the report it is based upon. However, for this document, the Executive Summary appears to be a convenient place to put all sorts of new information. Normally, a member of the public having a question raised from material in the Executive Summary would refer to the appropriate section of the main report or a supporting appendix to find a more detailed description. However, that is not possible in this document as many of the figures and their supporting information on results are only presented in the summary and not in the main report.

The Executive Summary also suffers from the same problems listed above in Comments 1-4. Due to the size of this particular document, the Executive Summary may be the only thing that people actually read, making it even more important for the summary to accurately reflect the analysis of the main report. This includes the listing of the limitations and uncertainties of the analysis, more so than the extremely brief discussion in Section 4 of the summary.

4

Idaho HLW & FD EIS

Appendix

D

Recommendation 5: The Executive Summary should be rewritten to actually summarize the report it is based upon.

This is a fine document in terms of readability and presentation. I am sure it will set a new standard for DOE Environmental Impact Statements once its technical flaws are corrected.

Sincerely,

Jim Willison, Certified Health Physicist

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Document 62, Shoshone-Bannock Tribes (Claudeo Broncho), Fort Hall, ID Page 1 of 7



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APR 24 2000

April 19, 2000

T.L. Wichmann, Document Manager U.S. Department of Energy Idaho Operations Office 850 Energy Drive, MS 1108 Idaho Falls, ID 83401-1563

ATTN: Idaho HLW & FD EIS

Dear Mr. Wichmann:

The Shoshone-Bannock Tribes have reviewed the draft EIS for High-Level Waste and Facilities Disposition dated December 1999. We have some technical questions and comments on this matter which are attached to this letter. We would like to have these questions and comments addressed at a meeting with the Fort Hall Business Council as the governing body of the Shoshone-Bannock Tribes and appropriate staff at a time to be set. In addition to the technical comments and questions we do have policy related comments and concerns as well. I will address these concerns in this letter.

The members of the Shoshone-Bannock Tribes (Tribes) had made their permanent home on the Fort Hall Indian Reservation located in southeastern Idaho pursuant to the 1868 Fort Bridger Treaty 15 Stat. 673. The membership of the Tribes includes almost 4000 members, many of whom live on the Fort Hall Indian Reservation and in the surrounding communities. There are two major interstates (I-15 and I-86) that go through the Fort Hall Indian Reservation. In addition, the Blackfoot River and Snake River make up the borders of the Fort Hall Indian Reservation. In addition certain Bands of the Shoshone and Bannock people have lived in this area since time immemorial. The INEEL site is included in the traditional and aboriginal areas frequented by the Shoshone and Bannock people. The Fort Bridger Treaty in Article 4 contemplates that tribal members will be allowed to continue their hunting, fishing and gathering activities off of the Reservation, including that area in and around the INEEL. Because of the location of INEEL less than fifty miles from the Fort Hall Indian Reservation, the Shoshone-Bannock Tribes are greatly concerned about the activities which occur on that site including the issues involving the high level waste and disposition of such waste which is the subject of the EIS. The Tribes are concerned that the air, land and water may be affected by the activities

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Document 62, Shoshone-Bannock Tribes (Claudeo Broncho), Fort Hall, ID Page 2 of $7\,$

Wichmann EIS Comments April 19, 2000 Page 2

occurring at the INEEL. This is the permanent homeland of the Shoshone and Bannock people. If this areas becomes contaminated, companies, towns and non-Indians can move from this area. This is not so for the Shoshone and Bannock people. They have lived in this area for hundred of years and will continue to live in this area long after the INEEL is shut down and operations have ceased. The Tribes are concerned about the legacy such activity leaves for the future generations of the Shoshone and Bannock people and the resources of the area and the Fort Hall Indian Reservation.

| In light of the concerns of the Shoshone-Bannock Tribes, it is imperative that the EIS address the special needs of the Tribes. While DOE staff has met with tribal staff on this matter, there has not been any official consultation between the Secretary of Energy and the Fort Hall Business Council to assure complete discussion and resolution of issues with regard to this matter. This should occur as soon as possible. The tribal lands and resources which are trust assets held by the United States may potentially be affected by the actions which are the subject matter of the EIS.

In order to provide for proper consultation on this matter, it may be necessary for the Department of Energy to fund an additional position for the Tribes to work on this matter along with sufficient funds to allow the Tribes the ability to hire the expertise needed for them to properly participate in the EIS process and the follow up implementation. This is something that can be discussed further in a consultation or perhaps in discussions about the Agreement in Principle.

It is our understanding that while DOE has made the State of Idaho a cooperating agency in this EIS, they have not done so for the Shoshone-Bannock Tribes. In light of that, the Department of Energy should assure that any other federal agencies with trust responsibilities to the Tribes, such as the U.S. Department of the Interior, Bureau of Indian Affairs and U.S. Department of Health and Welfare, Indian Health Services are also involved in the EIS process at the INEEL. It may be appropriate to establish a Memorandum of Understanding of some sort between the federal agencies to ensure that the land, resources and people of the Fort Hall Indian Reservation are protected in the EIS.

As there is no preferred alternative set forth in the EIS, it is difficult to ascertain which alternatives DOE is seriously considering. The DOE could have assisted stakeholders, including the Tribes, considerably by describing in detail, those alternatives which yield the best chance for the final waste form to be accepted at the federal repositories. The DOE has a responsibility to indicate which alternative treatment method would meet the RCRA de-listing requirements at Yucca Mountain and WIPP. Similarly the DOE should have detailed in the final EIS documents the capacity limits at both the WIPP and Yucca Mountain sites and which alternative(s) provide

Yucca Mountain and WIPP. Similarly the DOE should have detailed in the final EIS documents the capacity limits at both the WIPP and Yucca Mountain sites, and which alternative(s) provide for greater assurance that the treated waste would receive highest priority for acceptance at these repositories.

Document 62, Shoshone-Bannock Tribes (Claudeo Broncho), Fort Hall, ID Page $3\ of\ 7$

Wichmann EIS Comments April 19, 2000 Page 3

[The Tribes are very concerned about several of the proposed alternatives because of their inherent adverse risks to Tribal populations and natural resources. The Tribes adamantly oppose the No Action Alternative, which stipulates the storage, for an indefinite period of time, of High-Level Waste at the INEEL. For similar reasons, the Tribes oppose the Continued Operations Alternative, because of significant uncertainties associated with the operation of the calciner, and the inability under this option, to make HLW, road-ready for shipments by the year 2035.]

There appears to be a significant risk in future use of the calciner, even after upgrading, that the calcine product would not meet the waste acceptance criteria at the High-Level Waste Repository. The EIS document reports that calcine products would not be acceptable at Yucca Mountain, for example, because they contain RCRA waste. Therefore, since RCRA-bearing waste would have to be further treated before it would meet the waste acceptance criteria, and because of the uncertainties of successfully permitting the calciner pursuant to RCRA and Air Quality requirements, the Tribes oppose all calciner-based alternatives in the EIS.

(y2-13) The Tribes are very concerned about the apparent change in the definition of High-Level Waste, by DOE, associated with this draft EIS. In the description of the Transuranic Separation Option, the HLW is separated into TRU and LLW. This proposed change in classification is in contradiction to DOE's own definition of HLW. With the information available at this time, the Tribes oppose plans which would include permanent storage of Low-Level Class C waste at the INEEL.

The Shoshone-Bannock Tribes have more detailed comments attached in support of our position.

 $\begin{array}{c} \text{The Tribes wish to thank the DOE for their presentations at Fort Hall regarding this important} \\ \text{1}\chi . C (4) & \text{EIS, and appreciate the opportunity to submit these written comments.} \end{array}$

Sincerely yours

Claudeo Broncho, Vice Chairman
Fort Hall Indian Reservation

attachments

cc: Fort Hall Business Council (7)
Bill Richardson, Secretary of DOE
Bob Pence, DOE- Tribal Coordinator
Ann Dold, Manager, Idaho INEEL Oversight Office
Candy Jackson, Tribal Attorney
Robert Bobo, Tribal DOE Manager

62-17

102-18

SHOSHONE-BANNOCK TRIBES AIR QUALITY DEPARTMENT's High Level Waste — EIS Comments

62-15 .	No Action Alternative - This alternative presents a higher level of risk to Snake River
11.8(1)	Plain Aquifer with storage of liquid waste. Also no treatment would occur to enable
	High-Level Waste (HLW) to be shipped out. The Tribes vehemently oppose the No
	Action Alternative, or any alternative which calls for indefinitely storing HLW at INEEL.

Because of the inability to make HLW ready for shipment out of Idaho by 2035, and 62-16 because of significant uncertainties associated with the operation of the calciner, 11.0(1) including emissions violations, permitting issues, the Tribes oppose the Continued Operations Alternative.

The Hot Isostatic Pressed Waste Alternative, in its treatment of Mixed waste, may yield a waste that cannot be accepted at the HLW repository - a demonstration to EPA would 111.D.Z.b(6) have to be done that ensures that it meets the standards of acceptance by EPA. This adds an additional uncertainty to this method. (See Summary pg.S-19), compared to vitrification treatment which has already been approved by EPA as a method to de-list RCRA wastes (pg. 6-33). Note that Yucca Mountain does not plan on accepting RCRA waste, so all waste must be tested through treatability tests, on arrival at repository. Not only EPA, but the State has authority over waste acceptance, and States may have more 111.F.2(2) stringent requirements, adding to the uncertainty of which treatment method has the best chance to meet the standard. It can be very difficult to get the waste sticker off. In terms of successfully getting the HLW out of Idaho, the most important question to DOE may be: Which alternative has the best chance to meet the de-listing or RCRA requirements?

Oppose all Calciner-based Alternatives - There appears to be a significant risk in future 62-19 use of the calciner, even after upgrading, that the calcine product would not meet the III.C (4) waste acceptance criteria at the High-Level Waste Repository. The EIS document reports that calcine products would not be acceptable at Yucca Mountain, for example, because they contain RCRA waste. Therefore, since RCRA-bearing waste would have to be further treated before it would meet the waste acceptance criteria, and because of the uncertainties of successfully permitting the calciner pursuant to RCRA and Air Quality requirements, the Tribes oppose all calciner-based alternatives in the EIS.

102-20 The Transuranic Separations Alternative has advantages in that all the High-level waste goes away, is converted to either Transuranic waste which could go to WIPP, or Low-III.F.3 (1) level waste for on-site or off-site landfill. (However, WIPP cannot receive all of DOE's inventory of TRU waste, so there is a risk that TRU waste generated by this treatment method will ultimately remain at INEEL.) How can DOE justify the disposal of HLW by 62-21 V (9) reclassifying and managing it as LLW? Since the HLW fission compounds, including Cesium-137, and Strontium-90, cannot to our knowledge, be destroyed in the treatment process, the Tribes oppose the disposal of this highly radioactive material as Low-Level waste, especially in sub-surface burial over the Snake River Plain Aquifer.

Document 62, Shoshone-Bannock Tribes (Claudeo Broncho), Fort Hall, ID Page 5 of 7

62-22

62-23

62-24 III.D.3(1)

62-25

62-26

62-27

III.E(1)

However, if DOE intends on storing at INEEL what would have been defined as High-Level Waste, but which is now defined as Low-Level - Class C (containing short-lived fission Cesium-137, and Strontium-90) the Shoshone-Bannock Tribes oppose the new classification. Through this classification process High-Level Waste may end up being permanently stored at INEEL in general, the DOE fails to adequately describe the classification system, on-site and off-site storage plans, for the various sub-classifications 111.F.4(2) of "Low-level waste". With the information available at this time, the Tribes oppose plans which would include the permanent storage of Low-Level Class C waste at the

Appendix

D

New Information

The EIS documents do not adequately investigate the capacity problems at the WIPP facility, in relation to the EIS alternatives that yield TRU waste (such as the Transuranic Separations Option). The question needs to be answered: How much TRU waste generated by INEEL in the future, will be accepted at WIPP? The DOE should have more adequately described the specific alternatives that creates additional TRU waste, which is unlikely to be accepted at WIPP, either because of capacity problems or because the waste would not meet the waste acceptance criteria. The EIS documents fail to adequately describe which alternatives would best result in the successful removal of HLW to federal repositories. The EIS should have more adequately addressed the III.F. 2 (1) capacity issue at Yucca Mountain, and waste acceptance criteria of each of the alternatives. For example, unless there is a significant change in the way that DOE calculates the metric tonnage of High-Level Waste, Yucca Mtn. has a capacity to receive only half of DOE's inventory of HLW. 111. D.Z .C (4)

The Tribes reserve the right to change their position on any of these proposed alternatives upon receipt of new or more detailed information.

Document 62, Shoshone-Bannock Tribes (Claudeo Broncho), Fort Hall, ID Page 6 of 7

COMMENTS ON HIGH-LEVEL WASTE EIS Shoshone-Bannock Tribes
$\mathcal{L}2-28$ $pg. S-5. box$ - What is the status of negotiations with the State regarding a plan and schedule $VII.D(4)$ for treatment for calcined waste?
VII.D(#) DE. S-7, bottom left column - It is unclear if the deadline of October 1, 2001, refers to the time when a public announcement must be made regarding DOE's intention to upgrade the calciner, or if the deadline is October 2, 2000.
$\frac{1}{\sqrt{11.D(b)}}$ $\frac{pg. S-7, top \ right \ column, 2nd}{Agreement/Consent Order \ might \ need to be changed}$
Dg. S-10, separations alternative - The transuranic separations option "does not result in a HLW faction" (however, the chart in Figure S-18, pg. S-49, shows that there is a HLW faction in the transuranic separations option.) Regardless of what DOE calls it, all the waste currently stored in high-level waste tanks and calcine-bin sets should be processed and removed from the NEEL.
62-33 pg. S-10, minimum INEEL processing - If DOE transports calcine to Hanford for treatment, why go to the expense and health risks to workers and public to ship it back to INEEL?
b2-34 III.F.2 (1) By S-21, sect. 5.2 - Why would DOE handicap itself by calculating MTHM equivalency in HLW in such a way that the proposed repository could only accept 50% of HLW, whereas there are two other methods for calculating MTHM equivalency that would put DOE within the current allocation of DOE HLW for the repository" What possible advantage would the former calculation hold over the latter?
b2-35 pg. S-29, light column - To calcine SBW, store it in the bin sets, then retrieve the calcine and process it seems, at the best, highly inefficient.
b2-36 VIII.#(2) Dg. S-36, right column - Has the form in which the calcine would be packaged been determined?] Any idea on the configuration of shipping containers?] If this alternative was picked, would another environmental assessment or ELS be performed?] C2-38 VII.A.(2)
<u>pg. S-49</u> , <u>left</u> column - The second paragraph states that "Construction activities produce relatively little radioactive and hazardous waste", but goes on to say that the construction impacts for the Full Separations Option would produce over 2000 cubic meters of hazardous, low-level and mixed waste. That value does not seem like an insignificant amount. Second, why is radioactive waste counted as construction-related waste? How is radioactive waste generated during the construction process?
W2-40 [pg. S-55, left column - 2400 recordable injuries and 290 lost workdays!? That seems excessively high. Please explain how these data were derived]

Document 62, Shoshone-Bannock Tribes (Claudeo Broncho), Fort Hall, ID

Page 7 of 7 (v2.41) [pg. S-55, left column, long-term impacts - In determining the maximum individual dose, where is the hypothetical well drilled in relation to the tank farm. What is the proximity of one to the other?] (92.4)2 pg. S-56, right column - Please explain how the concentration of plutonium can go from a (91.4)2 courrent value of 0.1 picocurie per liter to 36 picocuries per liter in the year 3585. pg. S-57, left column - The design life of storage tanks is either "500 years" or "well in excess of 500 years". The former value is "assumed"- and the latter value is "estimated". So which is which? What is the basis for your assumptions and estimates? Please be more precise. pg. S-58, right column - The inventory of existing waste stored at INEEL fails to include **V**(I)

New Information

Idaho HLW & FD EIS